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ABSTRACT

Telecottages originated in Scandinavia in the 1980s in an attempt to reverse the decline of isolated communities by giving them access to information and services, facilities for training and distance education, and the opportunity to produce income through telecommuting. In 1992-1993, the Australian government began funding the Telecentre Program, which finances the establishment of community-based telecenters in rural communities. The telecenters' mission is to assist in adoption of new technologies and business practices through the use of modern telecommunications and computing technologies. As of June 30, 1994, 31 community-managed telecenter projects had been approved and were in various stages of development. It is anticipated that the 40-45 grants to be approved under the Telecentre Program will permit the establishment of individual telecenters or outstations in more than 70 communities. Telecenters are seen by many as vehicles for improving management of agricultural industries and their resource base in a manner consistent with the principle of ecologically sustainable development; and developing strong, viable, economically diverse, and socially just rural communities. The future of telecenters in Australia's rural communities depends largely on whether the existing telecenters are able to attain self-sufficiency and have a broad impact on their communities. (MN)

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THE AUSTRALIAN TELECENTRE PROGRAM:

A NEW APPROACH TO TECHNOLOGY TRANSFER

AND RURAL COMMUNITY DEVELOPMENT

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ABSTRACT

Information technology and telecommunications are providing new avenues for the sharing of information on developments in farm production technologies and marketing possibilities for rural products, plus new ways of assisting community sustainability.

In the 1980s, telecottages first opened in Scandinavia seeking to reverse the decline of isolated communities. These provided access to information and services, plus facilities for training and distance education, and income production through tele-commuting.

The Australian Government has assisted the establishment of over 30 community managed telecentres in rural areas, providing public access computing and IT facilities for technology transfer, employment, tele-marketing, community service information, business enterprise development, education and training.

Introduction

The Australian Government operates a program to fund the establishment of community based telecentres (sometimes called telecottages) in rural communities. These assist the adoption of new technologies and business practices through the use of modern telecommunications and computing technologies. These telecentres have become points of dissemination for new ideas , through a combination of easy access to electronic information sources, formal training sources and informal exchange of experiences amongst people, both locally and through the electronic network.

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Australia's Rural Sector

Australia is a large island continent in the Southern Hemisphere adjacent to the Indian and Pacific Oceans. The Australian economy was once highly dependent on rural industries such as wool, wheat, sugar and beef, particularly in the provision of export income. The contribution of rural industries to the economy has been declining in recent decades and the economy is now maturing to a more balanced structure with significant increases observable in the contributions from both manufacturing industry and the services sector.

Declines in the profitability of rural activities have seen a reduction in the number of farms and fewer people employed in the sector. A decline in the economic activity in rural towns and the broader regional community has also been observed, as has the availability of government and private services in these areas and the community infrastructure generally. However, within many rural areas of Australia, the farming and grazing industries remain as large direct and indirect regional employers and in many regions remain major components of the regional economy.

R&D and Technology Transfer

The agricultural and pastoral technologies are supported by both private and public investment in research and development. The rate of adoption of new technologies is variable, depending upon a range of factors including the effectiveness of the extension process and communication of new ideas.

The role of public authorities in this process has declined in recent years as the commitment to a public extension system has been reduced. There has however been a commensurate increase in interest in the utilisation of computer based information technologies for increasing the availability of information on new technologies which might potentially increase the profitability of rural enterprises. This interest extends beyond changes to technology, encompassing other information on sustainable resource management, marketing opportunities, regulatory requirements and institutional arrangements.

The Past Decade - An Environment of Fundamental Changes

In the 1980s, major changes to the nature of business behaviour and industrial structure occurred, principal amongst these was the quantum leap in information exchange made possible by the proliferation of highly capable and affordable computer technology. The deregulation of the financial and international exchange markets also has added new considerations to the management decisions of primary producers.

For many rural communities in developed economies, manufacturing or service industries had broadened the employment base and provided the higher level of community amenity which a larger population may bring. Many of these produced inputs to rural industries, such as farm machinery, or alternatively, processed the rural products in some way, such as a flour mill, a cannery or a juice plant. In the past

decade, many such communities have faced the closure of these service industries which have not remained viable in the face of changed conditions.

These changes have fundamentally altered the shape and structure of many such rural communities. In Australia, some areas, principally the larger provincial cities, have benefited from the changes because the regional patterns of service delivery have focused on them. Others however, have declined in service levels and population as the service providers and infrastructure have closed or relocated elsewhere.

Responses to Change at the Rural Community Level

People remaining in declining rural communities have sought to stem the tide of change. Traditional responses such as placing political pressure on governments and business corporations have met with some short term successes, but generally cannot reverse the underlying forces of change.

Many communities have instituted community development programs of various sorts, often sponsored by local government and drawing funding from a range of State and national Government programs. These range from programs to train unemployed people, through programs to support the establishment of new small business ventures, to comprehensive economic development bodies.

Some communities have looked to their own resources and focused on self-help and cooperative local ventures. These range from the facilitation of small scale local enterprise by the establishment of a market structure, often focusing on cashless exchange systems where local people barter goods or services for "points", through to the formation of community business ventures. In a number of Western Australian towns, community companies have been formed to purchase empty buildings and to negotiate new tenancies (often at very favourable rental rates) to attract new ventures to their town. Several towns have also offered free land to anyone who would move to the town and set up a business.

Some far sighted communities have banded together to target a product from their district which could be niche marketed and then organised for community members to travel overseas to establish direct marketing connections for the sale of their product. The assembly and processing of the product may be done on a community basis through a local facility tailored to the identified market opportunity.

At one extreme, there are those who see the changes as an opportunity for development of new opportunities in the information industries or through embracing new ways of doing business. Many of the community however respond by working harder at traditional solutions and finding that they are progressively slipping behind in their living standards, despite continuing hard work. Despite this, they generally are keen to support any development or education proposal in their community. At the other end of the spectrum are those who cannot adapt to the pace of change and may react in a negative manner.

The Australian Government has sought to help rural communities adapt to these changes with programs which support community self-help processes, including some

which focus on access to information technologies, to help people apply other new technologies in their farming, other employment and business enterprises.

The Telecentre / Telecottage Approach

One approach to adapting to the changes facing both individuals and the community, has been through the establishment of telecentres or telecottages. The terms are used interchangeably in Australia. The term, 'community tele-service centre', may also be encountered in the literature for similar facilities.

Telecentres are community owned and managed facilities which may contain a range of computing equipment, associated office equipment and in some cases, specialist teleconferencing equipment. Their specific objective may vary from community to community, but generally is to enable community members to access modern computing technology, and through it, access to management software, on-line information sources, bulletin boards, distance education and information on local resources and services. The exact combination of facilities and services is tailored to match the local needs and opportunities by the local broadly based, community management committee. They generally operate on a cost-recovery basis.

Telecentres allow community members an inexpensive way to harness some of the benefits of the present changes while ameliorating some of the disadvantages of change. The impact of telecentres on local community life may be seen in terms of the impact on employment, business enterprise, service delivery, education and training.

Employment opportunities focus on two aspects of the telecentre. The first is the use of the information and communications resources to start small businesses which market to the world using those resources. There is an examples of an outback adventure tourism operator who started business using a telecentre to link into the travel agency networks. The second is the use of the telecommunications facilities for teleworking or telecommuting where a person works for an employer at another location, either on a salaried, piecework or contractual arrangement. Some rural telecentres have undertaken data entry, clerical or marketing work for city organisations under such arrangements. Experience has shown that this type of work is currently difficult to obtain. The formation of the Asia-Pacific Telework Association (see later in this paper) will hopefully provide a structure for the brokerage of this type of work and for the accreditation of teleworkers.

In addition, most existing telecentres have a local provider of secretarial services and sometimes book-keeping or desktop publishing, operating from them. In some towns, businesses have stayed because they can cut representational overheads by using a telecentre worker when clerical support is required.

Existing businesses, including farmers, can use telecentres to gain new management skills, to obtain information and to adopt new marketing techniques. Telecentres are the local access point to a variety of management training options, both from education institutions and locally provided.

They also provide managers with access to computers, business software and on-line information sources at a reasonable charge and with staff who can train and assist in its use. The use of various networks for access to E-Mail and bulletin boards is also common from telecentres. These communications facilities can be used for marketing certain types of products. These are usually time dependent products such as fresh flowers and live seafood, or highly differentiated products with niche markets. In Tasmania, one telecentre is used by fish farmers for contact with Japanese buyers of high quality live fish. In other places, marketing of cottage industry products is undertaken. At a simpler level, local exchange bulletin boards put buyers and sellers in contact for anything from feed grain or store stock to second hand machinery parts. Local skills registers may also put you on contact with a local resident who can design and install a database for your business, crutch sheep or teach you to play the tuba.

In many communities, the telecentre also acts as a community service information provider. Often a database with details of both government and local community services is maintained and may be accessible by telephone modem to off-site users.

Often the delivery of education and training is identified as a priority by a community. Communities may undertake the provision of a distance learning facility themselves, or in conjunction with an education institution or provider network. In Western Australia, most telecentres have formal links with the Department of Training which has provided funding and support for telecentres, coordinated through the TAFE External Studies College in Perth. With the deregulation of the education market, telecentres or individual students can negotiate to undertake study courses with a range of institutions within and across state borders (and presumably internationally?) for delivery by electronic means to the telecentre.

Some communities are planning to set up locally controlled education institutions independent of existing education bureaucracies. An example is the proposed C Y O'Connor College in the wheatbelt region of WA. This was not to be a traditional institution with teaching campuses, but rather a network of distance education sites taking courses from a variety of providers at different levels and locations. There is a level of overlap between this proposal, telecentres and open learning proposals. It will be interesting to see how the C Y O'Connor College proposal evolves in the future.

Because of the dispersed nature of WA communities, the development of satellite delivered video for education and training purposes has progressed further than in many other States. A range of mainstream education materials, plus in-service training aimed at groups like police and nurses (encrypted for privacy where needed), are delivered using a combination of one way video on the satellite and two way audio using telephone lines. Many WA telecentres have facilities to receive this service.

Education and training is not only delivered from education institutions. Some of the most effective training is delivered locally using available skilled persons (who are not always professionals or teacher trained). This local low scale training often proves effective in helping people who have had little contact with the education system since their schooldays, back into education and training. Typically, 'introduction to computing' courses fill this role at many telecentres. A range of simple follow-up

courses may then be offered to build an individual's confidence and knowledge to the point where a return to formal education could be considered. Self paced video or computer based teaching packages also may be available for self-education purposes.

Another service which telecentres may provide within their community is teleconferencing. In its simplest form this relates to telephone audio conferencing. Businesses and community groups often will hire a teleconference facility for a meeting with other groups rather than having people travel long distances for a face-to-face meeting. One outback telecentre is equipped with a bridge which enables an on-line conference of a number of people to be organised at small cost, enabling committee meetings of local associations to be held without members leaving their homes.

Video conferencing is a more complex and expensive version of teleconferencing. It is expensive and fraught with technical difficulties, particularly where trying to connect equipment from different suppliers. There have been a number of technical developments in video technologies in recent times and a number of PC based commercial systems are coming onto the market at reasonable prices. Some claim to be able to be operated over standard telephone lines, but there is considerable debate as to whether the images are of an acceptable standard and whether the telephone network in country areas can sustain the data transmission rates needed for video. Telecentres are unlikely to find teleconferencing services based on the current generation of video conferencing technologies to be economically viable. This may change in the future for centres which have suitable telephone network connections.

Telecentres are one method by which a community can work together to take the first steps to use the new computing and information technologies for their own benefit. They enable people to explore new business opportunities at a reduced level of risk by the use of communal IT facilities rather than initially outlaying the cost of their own equipment. They also provide a supportive and practical learning environment with a network of similar people, which is appropriate for the learning styles of many people in rural communities. It is also a way for rural communities to regain some control over the services and facilities in their own community.

Genesis of the Australian Government's Telecentre Program

The first telecottages were established in Scandinavia in the mid-1980s as a way to deliver a range of services to remote rural communities. Following these examples, a number of Australian groups experimented with the concept. In NSW and WA, several distance education programs experimented with the delivery of education to remote communities using this technology. In South Australia, the library service installed public access networked computing facilities at a number of sites and in Victoria, computerised community service delivery was experimented with within the neighbourhood house movement. These applications of the new technology created interest amongst a limited group of people who sought to extend the benefits to the broader community. However funding for such experiments was difficult to obtain and it was often difficult to convince the broader community the relevance of the concept.

By the late 1980s, the telecentre concept spread from Scandinavia to the USA, UK and the Continent. These early telecentres tended to focus either on providing education and training, or alternatively, on teleworking. Within the rural policy area of the Australian Department of Primary Industries and Energy (DPIE), the potential of telecentres as an agent of change and community development in rural areas was recognised. A study on this potential was then commissioned from the Rural Development Centre of the University of New England. The report (Horner and Reeve 1991) detailed possible applications of telecentres to the Australian situation and concluded that telcottages had the potential to contribute in a number of ways, while identifying a number of limitations and difficulties which needed to be addressed.

Also at this time, Tom Cass from Telecom Australia was seeking to assist a number of Australian rural communities to establish experimental telecentres. Tom also had based his involvement on a model which combined both the education and teleworking aspects at the one site. He worked with a number of communities which later went on to develop telecentres. His contribution largely focused on facilitating the future-search process by which the community identified the opportunities which the new technology could present to them, and on part-funding of these projects.

A number of these groups sought further funding from the Rural Access Program (RAP) of the DPIE. The RAP is a grant program which makes limited amounts of money available to rural community groups for social and educational purposes. In 1991-92, funding was provided under RAP for the initial telecentres at Cygnet, Tasmania and Walcha, NSW, both in conjunction with Telecom funding.

It was however soon evident that the particular needs of telecentres projects were not well matched to the requirements of the RAP. In particular, the development of telecentre proposals was more complex than a typical RAP project and RAP program staff did not have the time and resources to assist applicants with the development of the proposal. Also it was found that the development phase of a telecentre project was longer than anticipated and the typical amount of funding required exceeded that provided under RAP guidelines. The normal period for which RAP provided funding was a maximum of one year while the amount of funding was normally capped at $15 000. For telecentres, a period of two years was considered to be appropriate while project costs typically exceeding $50 000. In the light of these difficulties, a specific program was developed and included in the 1992-93 Federal Budget.

The 1992-93 Federal Budget included the first appropriation of funds for the Telecentres Program. $2.8m was provided for the four years ending 30 June 1996. This amount was subsequently increased to $4.0m as a result of commitments from the 1993 Federal Election. The profile of funding is as follows;

FY 1992-93	$0.70m	
FY 1993-94	$1.00m	
FY 1994-95	$1.55m	
FY 1995-96	$0.75m	Total $4.00m

Funding is provided to broadly-based community groups for the purpose of establishing and operating a community telecentre which is tailored to the specific, identified needs and opportunities of that community. The application process requires the applicants to undertake community consultation to establish these needs and opportunities and to develop a business plan which is based on the marketing opportunities thus identified. Some communities have conducted extensive exercises such as Future Search Workshops to help identify these needs and opportunities. The telecentre grant covers much of the initial capital and setup costs of the telecentre, including a part-time coordinator for the first year. Joint funding with other grant programs is permitted. Also, a community contribution in line with the circumstances of that community is expected. Second year funding covers part of the operating and salary costs. Funding is not approved unless the telecentre has reasonable prospects of attaining self-sufficiency at the end of the second year (in terms of its operating costs) from charges for telecentre activities.

Typical grants for individual telecentres are in the range $30 000 to $80 000, depending on the characteristics of the proposed telecentre. In several cases, networked telecentre proposals covering several communities, have been approved with grants in the $100 000 to $120 000 range.

Australian Telecentres - Current Situation

As at 30 June 1994, 31 telecentre projects have been approved and are in various stages of development, including the initial RAP-funded telecentres which have now been incorporated into the new program and have received additional funding to bring them in line with projects approved under the new program. It is anticipated that some 40-45 grants will be approved under the Telecentre Program , which will enable individual telecentres or outstations to be established in over 70 communities

Rationale for Government Involvement

The rationale for public involvement in programs such as the Telecentre Program is broad and multi-dimensional, encompassing political, economic and social dimensions. The DPIE mission is to increase the contribution that the agriculture, minerals, energy, fisheries and forestry industries make to the wellbeing of Australians. It is useful to look at the goals of the Rural Division of the DPIE to see how the Telecentre Program contributes to this mission.

Three of these goals are particularly relevant. These are (inter alia);

- efficient, market oriented and internationally competitive rural and related industries, actively seeking value adding and export opportunities,

- continuing improvements in the management of agricultural industries and their resource base consistent with the principle of ecologically sustainable development,

- development of strong, viable and economically diverse and socially just rural communities.

The underlying rationale for involvement in rural community matters is the proposition that a viable rural industry needs a viable rural community to support and sustain it. There is also recognition of community pressures for comparable levels of social justice across all parts of the community. The telecentre objectives of increasing local employment opportunities, of increasing access to management resources, of increasing access to information, education and training, and of delivering community services all contribute to the achievement of these goals at the community level.

The issue of public funding of telecentres is one of market failure, not unlike that of the public funding of research and development. The economic argument for public funding of R&D usually revolves around the perception that small firms and dispersed industries will underinvest in R&D because of the inability to appropriate the benefits or through risk aversion leading to underinvestment. I do not intend to review here the vigorous debate which has proceeded for many years over the rationalisation for public involvement or the appropriate institutional arrangements to achieve it.

Telecentres address a similar problem, eg. the rationale for public assistance in the provision of access to modern computing technology, information technology and networks which may assist individuals or firms achieve higher economic returns than they might otherwise achieve. As with the R&D example, individuals will underinvest in computing and information technologies and in information search because of their inability to capture the individual gains or perceptions of the risk involved in the adoption of new technology. Telecentres provide a means for individuals to learn about the new technologies and to test the relevance and applicability of these technologies to new business ventures or existing enterprises without outlaying (and risking the loss of) substantial funds to obtain their own facilities. It is anticipated that users will at least pay the marginal costs and that once a technology or idea has been successfully trialed, many telecentre users invest in their own computing equipment.

Program funding is structured in such a way that telecentre groups must move towards financial self-sufficiency after two years. Organising Committees must thus focus on the identification of viable applications of the new technologies relevant to their local needs and opportunities. They must further plan, promote and market these services to their community to ensure the survival of their enterprise.

This process leads to a secondary spin-off from the program in that it leads to a local group in the community which is practiced in the business planning process, and is motivated and empowered to plan and implement other ventures or services which meet needs in their community. This is an expansion of the entrepreneurial resource available within the community. Anecdotal evidence suggests that many telecentre committees become the focus for a set of broader community development activities which may make a considerable contribution to both the level of economic activity and the social amenity within their communities.

As part of its support for telecentres, DPIE part-sponsored along with Telecom and the Queensland Office of Rural Communities, a major international symposium on telecottages and similar institutions. The symposium, "Telecottage '93: Telecottages, Teleworking, Telelearning: Road to Rural Revival", was held at the Gold Coast, Queensland, from 29 November to 1 December 1993. The symposium was convened by Tom Cass of Telecom and conducted in association with The International Association of Community Tele-Service Centres (CTSC). Some 200 delegates attended, including strong international representation of key figures in the field.

Speakers from Europe, UK, USA, Japan and Australia presented papers on aspects of telecentres and teleworking. Key features which emerged include;

- In Scandinavia, government support has been reduced, leading to privatisation of telecentres and a reduction in their numbers. Cooperative working between telecottages has emerged, with brokerage (spotters fee) paid to the originating telecentre by the one receiving the teleworking job;

- In UK, a national association has commenced and is achieving useful coordination between telecottage groups. A large scale trial application of telecentres amongst remote centres in the Scottish Highlands and Islands is underway;

- There was considerable discussion of the experiences to date with teleworking. It has been very successful with certain types of people, however, both the employee and the supervisor must be screened for suitability for this style of working.

- As a consequence of discussions at the symposium, a group catalysed by several commercial teleworking practitioners has formed a group called The Asia-Pacific Telework Association, to broker telework and to accredit participants. Both of these aspects are important if an effective market for remote clerical working by telecentres is to be established.

- Providers of education and training are moving into new delivery methods as fast as funding and facilities will permit. One feature of the use of the new technologies is the breakdown of traditional geographic territories which education institutions have regarded as their own "natural" feeder markets. Students can now shop around and may choose to study electronically through an institution which is located outside their State or even overseas. Some education suppliers seem to feel threatened by the choice which this gives to a previously captive market.

- Some experimental applications of the telecentre approach in Less Developed Countries were reported. In Brazil, TeleBraz (ie. Brazil Telecom) has established a number of such centres in both urban and rural areas, in cooperation with European telecentre operators. The International Telecommunication Union (ITU), a UN based international coordinating body, is examining a proposal for extensive trialing of the telecottage/telecentre concept in a number of areas of Asia, Africa and S. America.

- Participants were addressed on international cooperation amongst telecentres by Lars Engvall, President of Community Tele-Service Centres International, which is the international association of telecentre operators and similar bodies and may be contacted at 44 Avenue de la Marne, Batiment B, F-06100, NICE, FRANCE.

- There appears to be a worldwide problem with the proliferation of different electronic systems and the associated absence of industry standards for some key technologies. This is particularly so for video systems, where a number of bodies (particularly educational institutions) have installed equipment which has not proved satisfactory, generally because of its inability to interconnect with other potential users' systems. There have been a number of "white elephants".

The general assessment of the Australian experience is that it is of world standard. The Australian approach which combines teleworking and telelearning contrasts with many overseas telecentres, which usually focus only on one of these. This dual approach reflects the Australian rural community needs profile. This particularly interested those considering the potential role of telecentres in LDCs, as it is arguably more relevant than the European experience. While the original telecottage idea from Scandinavia had its origins in service delivery to remote rural communities, much of the later European, UK and US experience was with urban communities. Some surprise was expressed by some participants that the Australian program was managed by the Department of Primary Industries and Energy, rather than a Labour Ministry.

Future Directions

The future of telecentres in rural communities in Australia depends very much on the success or failure of the present group of existing telecentres. This includes both their ability to reach self sufficiency and their broader impact on their communities. At this stage it is too early to judge these questions.

International experience has been that many telecentre-type operations tend to reach a stable sub-commercial level where the use of volunteers and some limited form of funding support from the community or government contributes to their survival. The current Swedish experience where telecottages, originally government funded, are now unsupported and operating on a commercial basis, is being watched with interest.

In general however, where telecentres have been supported by community members, it is generally believed by those communities that the telecentre has been a positive influence on economic development and employment generation in their community. Initial impressions from the Australian experience show that in some communities the telecentre has become a focus for community activity and business incubation. The bringing together of local people through the centre has led to starting other business or service activities. Some are government grant driven, while others are of a community based business nature. These are in addition to the benefits which individuals derive from access to modern computing and information technologies.

For the greatest advantage to be gained from the new technologies, highly capable communications networks are required. The network limitations are a major influence

on the range of services and applications which might be provided at any particular location. I do not propose to review the public policy debate on the technical specification and funding arrangements of the public telecommunications network, other than to say that the degree to which rural people will have access to emerging telecommunications technologies and to high capability networks will substantially shape future economic activity in rural regions and that the arrangements for funding the provision of these services is a political issue of major substance. While the public provision of such telecommunications services are being debated, some community groups are looking to establish low cost, low-tech solutions to their needs. In particular, some groups are looking to use packet transmission technologies on UHF CB radio to provide voice and data transmission through community operated low cost repeater stations. Negotiations are occurring with regulatory authorities on such options. The future will surely see other developments which open other communications options with the potential to change the way of life and economic activity in rural areas.

The telecentres program will hopefully be an important step in raising the levels of awareness of the opportunities provided by the new computing and information technologies in the economic and social life of rural communities. It also is an institutional arrangement which places much of the responsibility for reacting to change in the hands of the community itself and gives some power to communities to influence employment, education and services delivery in their community. For some communities, it may provide the window to the future for their very survival.

Notes

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Further Information on the Australian Telecentre Program may be obtained from;

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